# Design Principles/Patterns Foundation
## Spring AU 2021

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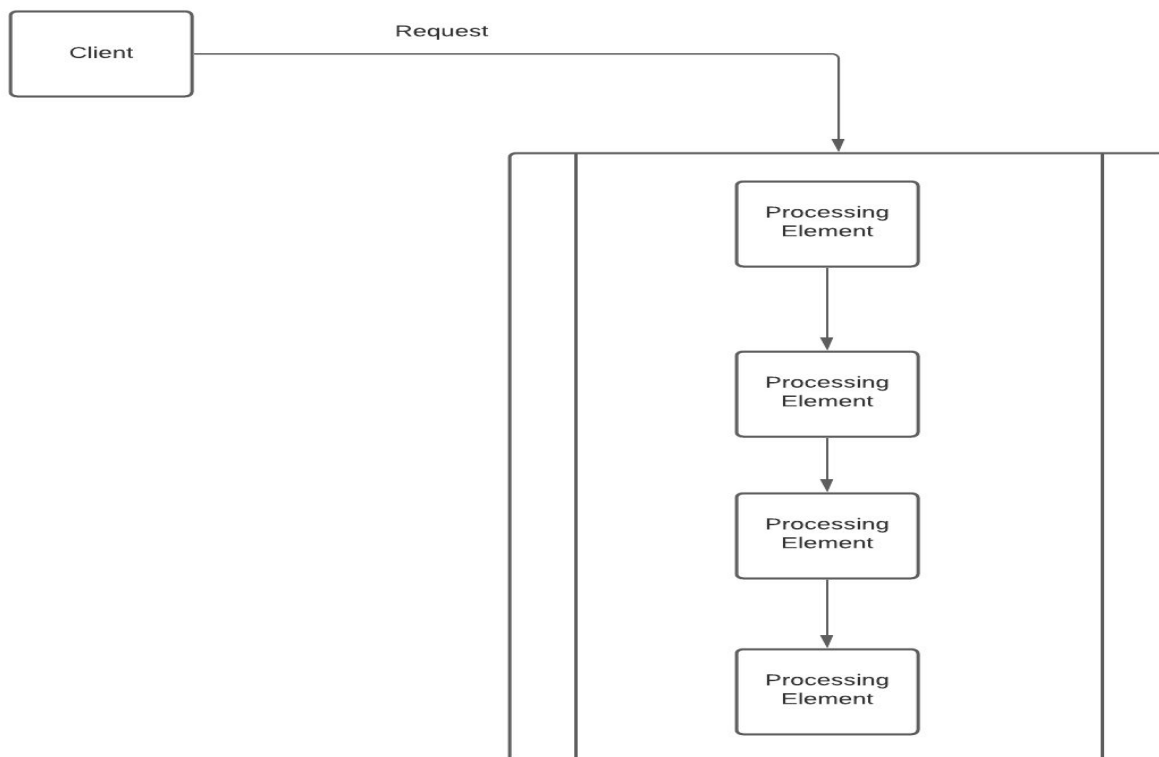
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## Assignment

**1. Class diagram and description of Chain of responsibilities design Pattern**

**2. Example(Java Classes) for Prototype(Creational) or Flyweight(Structural)**

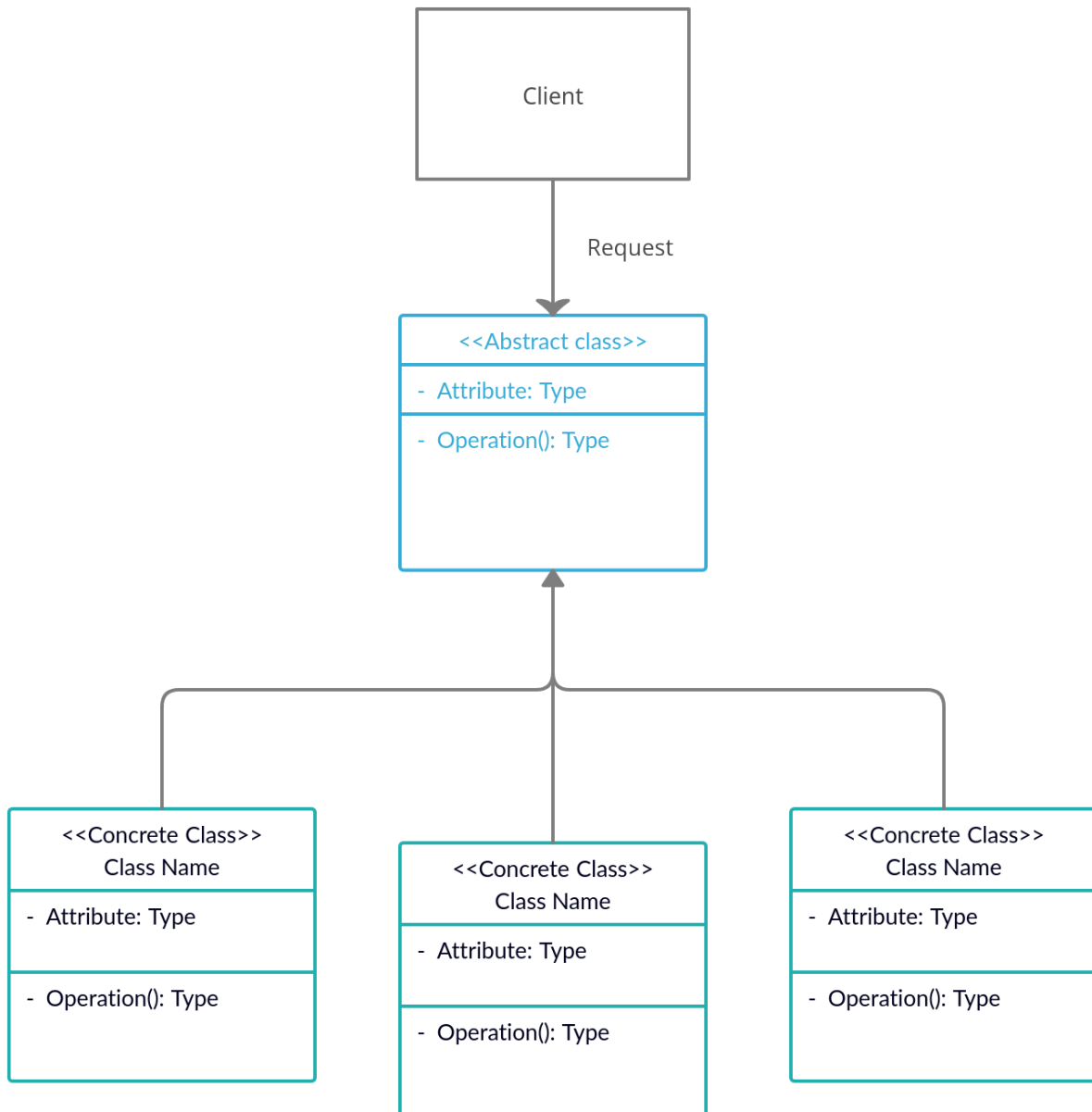### 1. Chain of responsibilities design pattern

It's one of the GoF design patterns in which there is a source command object and a series of processing objects.

The processing objects handle a specific type of request or process and pass the request onto the next object in the chain if any.
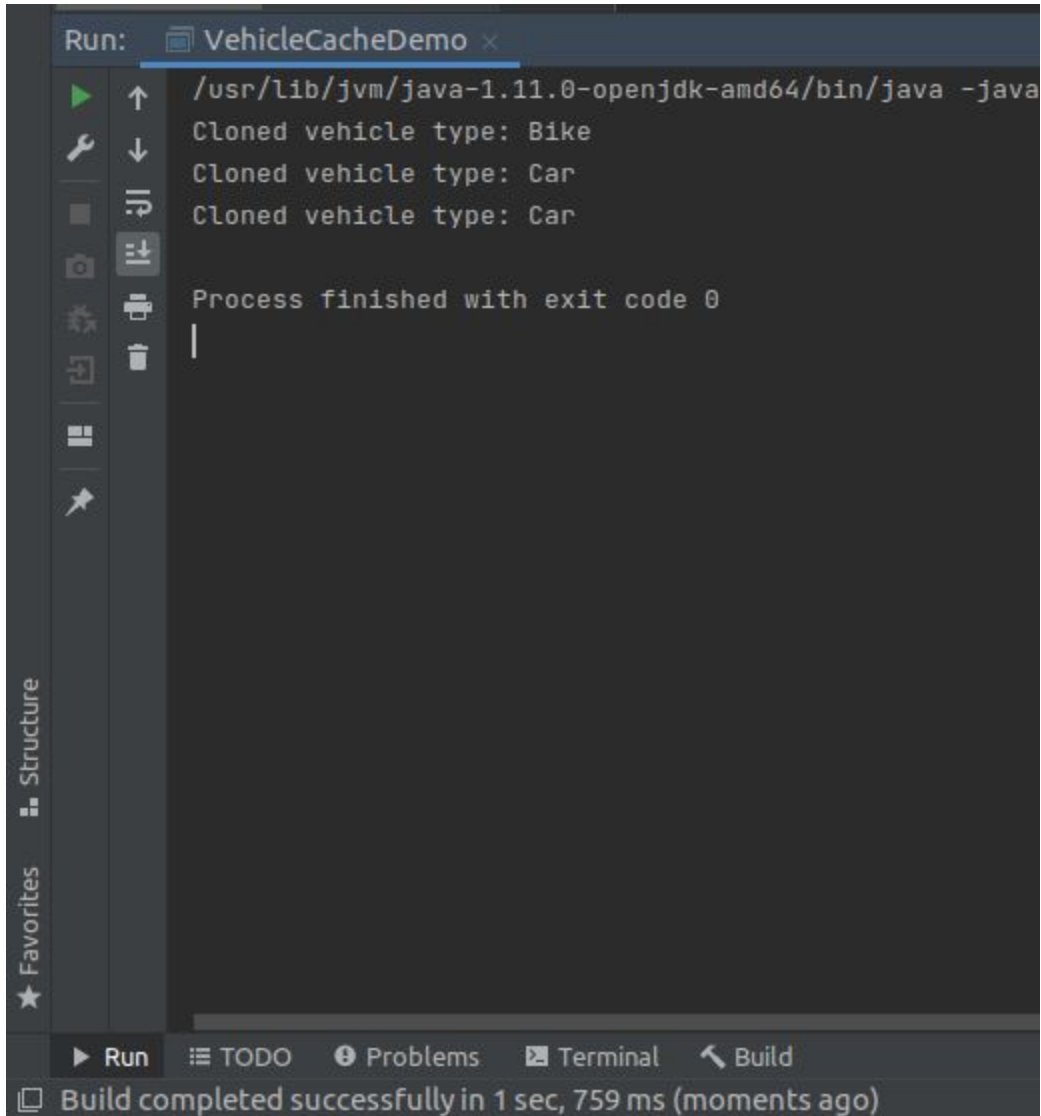
**Typical scenario:**

**Sample Class diagram:**

```
                    ┌─────────────────┐
                    │                 │
                    │     Client      │
                    │                 │
                    └─────────────────┘
                             │
                             │ Request
                             ▼
                  ┌────────────────────────┐
                  │   <<Abstract class>>   │
                  ├────────────────────────┤
                  │  -  Attribute: Type    │
                  ├────────────────────────┤
                  │  -  Operation(): Type  │
                  │                        │
                  │                        │
                  └────────────────────────┘
                             △
            ┌────────────────┼────────────────┐
            │                │                 │
   ┌─────────────────┐ ┌─────────────────┐ ┌─────────────────┐
   │ <<Concrete Class>>│ │ <<Concrete Class>>│ │ <<Concrete Class>>│
   │   Class Name    │ │   Class Name    │ │   Class Name    │
   ├─────────────────┤ ├─────────────────┤ ├─────────────────┤
   │ - Attribute: Type│ │ - Attribute: Type│ │ - Attribute: Type│
   ├─────────────────┤ ├─────────────────┤ ├─────────────────┤
   │ - Operation():Type│ │ - Operation():Type│ │ - Operation():Type│
   └─────────────────┘ └─────────────────┘ └─────────────────┘
```

**Example Scenario (Chain 1 -> 2 -> 3 …):**
1. **Login with username**
2. **Validate username**
3. **Send OTP**
4. **Prompt to enter OTP**
5. **Validate OTP**
6. **If valid go to success page or else failure page**

**The transaction chain fails if any of the processes fails**

**2. Code for prototype design pattern has been added as a separate folder.**

**Screenshot:**